

DO WORMHOLES FIX THE COUPLING CONSTANTS?

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If Newtonian gravitation is modified to use surface-to-surface separation between particles, it can have the strength of nuclear force between nucleons. This may be justified by possible existence of quantum wormholes in particles. All gravitational interactions would be between the exit mouths of coupled wormholes, emitting $1/r$ propagation of graviton flux as a function of the interacting particle sizes, allowing for the point-like treatment above (See Figure below). When the wormholes are 1 Planck length apart, the resultant force is the known value of strong coupling constant for nucleons, the weak coupling constant for quark-lepton interactions and ~ 1 for point-like leptons. I demonstrate overall consistency and ask the same question as does Hawking [1].

[1] S. W. Hawking, Nuclear Physics **B335** 155-165 (1990).

